DOCUMENT RESUME

ED 248 667 EC 170 446

AUTHOR Enell, Nancy C.
TITLE A Cost Comparison of Preparing Special Education Individualized Education Programs (IEPs) with and without Computer Assistance.
PUB DATE 24 Apr 84
NOTE 12p.; Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-37, 1984).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Administrator Attitudes; *Computer Managed Instruction; *Computer Software; *Cost Effectiveness; *Disabilities; Elementary Secondary Education; *Individualized Education Programs; Teacher Attitudes

ABSTRACT

The study reports on the costs and time associated with the preparation of special education individualized education programs (IEPs) with and without computer assistance. Data were gathered from nine agencies within California. In each agency special education administrators, teachers and parents were interviewed to determine the time and personnel costs related to preparing IEPs and the reactions of these groups to using computers in the IEP process. The major source of difference for the computer-assisted and the noncomputer-assisted groups was in teacher time used in preparing for and conducting the IEP meeting. The savings for the teacher with computer assistance ranged from 7 to 28 minutes. Additional costs for paper, equipment, software, and data entry were not perceived as problems. It was concluded that the reported payoff to teachers and administrators of a computer system for IEPs in terms of time savings is sufficient to offset the operational costs. In addition, teachers producing computer-assisted IEPs had much more positive attitudes toward special education, and all teachers expressed positive attitudes toward using computers. (CL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED248667

A COST COMPARISON OF PREPARING SPECIAL EDUCATION INDIVIDUALIZED EDUCATION PROGRAMS (IEPs) WITH AND WITHOUT COMPUTER ASSISTANCE

by

Nancy C. Enell
Evaluation Specialist
San Juan Unified School District
Carmichael, California

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Nancy C. Enell
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CE 170 446

A paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, April 24, 1984.

SEE 83-186

A COST COMPARISON OF PREPARING SPECIAL EDUCATION INDIVIDUALIZED EDUCATION PROGRAMS (IEPs) WITH AND WITHOUT COMPUTER ASSISTANCE

Objectives

The objectives of this study were to identify, analyze, and assess computer systems used within California to assist in the writing of the Individualized Education Program (IEP). The time and personnel cost savings were examined as part of this study to determine whether it was feasible to use computers to assist in preparing special education student IEPs. In addition to time and cost, the reactions of parents, teachers and administrators to using computers in the IEP process were studied. This paper will emphasize the cost comparisons which were made, based upon the personnel and time used in the IEP process.

Perspective

The documentation required for special education by Federal regulations has led to numerous complaints about the amount of paperwork. If computers can lessen the paperwork burden and yet be cost-efficient, more agencies will want to consider using them to prepare special education IEPs.

A study by Price and Goodman (1980) examined the costs associated with the development of IEPs based upon the records of 75 teachers. All of the IEPs were prepared by hand. Since that study, a number of programs have been developed to take advantage of computer technology to assist teachers in preparing IEPs. Several studies have been conducted for specific IEP computer programs to estimate time savings for teachers using those programs (Brown, 1982; Lillie and Edwards, 1982). This study compared IEP development costs in a sample of districts within California for those using and not using computers to prepare special education IEPs. It included different types of IEP programs in order to generalize about computer use and to compare computer-users with non-users.

Within California, only a few agencies surveyed in 1983 were using computers in any way related to IEPs. Of 105 agencies, only four had a proposed IEP printed by a computer to use at an IEP team meeting. Another eight printed current IEP information after the IEP team meeting was held. Others used computers to keep information which was required for state or federal reporting purposes, but did not produce any part of an IEP with computer assistance.

Elsewhere in the United States, a number of computer programs for IEPs were identified in 1983 which had been devloped and used to prepare various parts of an IEP. With an expanding interest in the use of computer technology, and of microcomputers in particular, a study of the benefits and problems associated with computer use for IEPs is very appropriate at this time.

This presentation is based on work sponsored by the California State Department of Education, Office of Special Education. Viewpoints and interpretations presented in this report do not reflect the views or policy of the Department of Education or the San Juan Unified School District. Stanley Barrick provided expert investigative research assistance in this project.

Methods and Data Sources

In California, a statewide survey was taken in the Fall of 1982 to ascertain the use of computers. Twelve agencies were identified which used computers to print all or part of an IEP. These agencies are identified and their systems are organized according to type of computer use in Table 1. Two of the twelve agencies used microcomputers, and the other ten used mainframe computers. Four of the agencies printed a "proposed" IEP and the remaining eight printed the current IEP information after the team meeting was held.

TABLE 1

Summary of Information from 90 California Special Education Local Planning Agencies (SELPAs) to Computer-Use Survey

SELPAs Using Computers			SELPAs Not Using Computers
Print Proposed IEP Information (Before IEP Meeting) 4 SELPAs	Print Current IEP Information (Following IEP Meeting) 8 SELPAs	MIS 49 SELPAs	29 SELPAs
Microcomputer Hesperia--Desert/Mountain SESR. San Bernardino County (First year pilot) Mainframe Simi-Ventura Consortium (Fifth year of operation) Placentia--Northeast Orange Co. (Now being piloted) Napa County SELPA (Now being installed)	Microcomputer Marin County SELPA Mainframe Elk Grove (Sacramento Co. SELPA) Irvine Merced Monterey Sacramento Solano Tulare	Some of these SELPAs indicated that they--or a district within THE SELPA--used computers in a way related to IEPs, such as listing students for annual or 3-year reviews or preparing an IEP agenda. They did not indicate that they print either a proposed or a current IEP.	

Following the statewide survey, a sample of four special education agencies within California which did not use computers for the IEP was selected for the "manual" sample. This group would be compared with the computer-users. Within these four agencies, a total of fifty-five people were interviewed. These people included directors, program specialists, teachers and parents. Findings from these manual sample interviews were designed to be compared with interviews in agencies using computers to assist in writing IEPs.

Four agencies which used the computer to assist in constructing the IEP were selected for the study as the "computer-user" sample, and interviews with staff and parents were conducted. In addition to the people included in the "manual" interviews, computer programmers were included in the computer sample. Fifty-eight people were interviewed regarding computer-assisted IEPs.

In the interviews with special education teachers and other staff, several tasks were presented. In the first task, participants were asked to identify the sequence in which a number of activities related to IEP meetings occurred. In a second task, participants identified the members who participated in the IEP development and in various types of IEP meetings. And in the third task, participants gave estimates of the average time spent in each type of IEP activity.

The time and cost findings from the interviews held with the manual sample were compared with those of the computer sample. Cost comparisons were made between the IEP process time used by computer-users and non-users. Also of interest were comparisons regarding the usefulness of the IEP produced by either method as viewed by parents, teachers and managers and comparisons of attitudes of these groups toward the use of computers in constructing the IEP.

Analysis of Findings

The activity sequence leading to an IEP differed in the two groups--computer-users and non-users--and also differed for various types of IEP placements. In order to do a cost analysis, it was necessary first to identify the type of IEP meeting. These were the types of meetings which were analyzed separately in the study:

Initial placement in designated instructional services (such as speech)
Initial placement in Resource Specialist Program (part of the day)
Initial placement in a Special Day Class (the majority of the day)
Initial placement in an agency outside the original agency
Annual review meeting for all placements

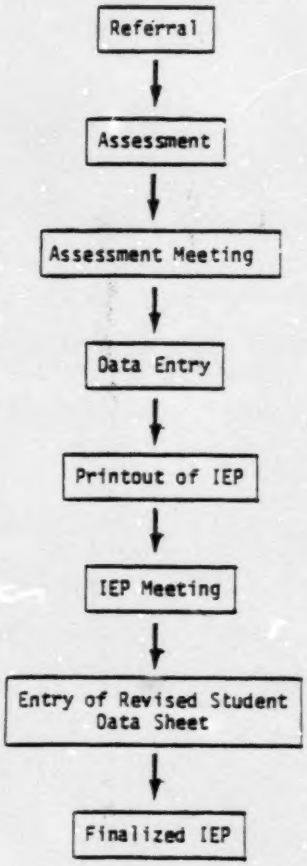
In general, the activities conducted by special education personnel for initial placement meetings followed the same sequence. Following the referral for special education, an assessment was planned. The parent consented to this assessment before any student testing was done. Following the assessment, a team meeting was arranged between the parent, the regular and special education teachers, and possibly other district representatives such as a school principal or the psychologist.

There was one major difference in the activities followed by the computer-users and the non-users in preparing for the initial placement meetings. Those using computers to produce a proposed IEP added three steps following the assessment process. The first step was a meeting of those involved in the assessment and/or a special recording of assessment information which was done in order to prepare the proposed IEP. Following this preparation of information for the proposed IEP, there were two mechanical steps which were done by clerical or other support staff. These were the actual data entry and the printout of the proposed IEP. In most cases, information for a proposed IEP had to be turned in at least one week in advance of the meeting to allow time for the data processing. These steps are presented in Figure 1.

Costs were based upon the personnel involved in each phase of the IEP development and the time estimates which were given by those interviewed. By averaging the number of minutes reported for various activities, the total time used by various professionals was obtained for the different types of meetings.

Figure 1

Steps in the Computerized IEP Process



The personnel cost estimates were based upon the mean salaries paid to various staff in the Far West geographic region of the United States during 1981-82, and reported by the Educational Commission of the States (1982). The time estimates and cost estimates for each type of meeting present the minimum and maximum time and costs based upon the number of participants. The minimum costs were from the smallest number of IEP team participants, and the maximum costs included all possible participants.

To show how these times and costs differed throughout the process, Tables 2 and 3 show the averages for the non-computer-users and the computer-users. The differences reported between the two groups are marked in terms of time spent in the assessment process and in the IEP meeting itself. Those using computers spent more time in assessment, but much less time in the IEP meeting itself. When these minutes are converted to dollars, preparing for and holding an IEP meeting with a minimal IEP team (teacher, principal and parent) is less expensive by $13.43 for those with computer-assisted IEPs. The cost for an IEP meeting with an expanded IEP team (adding psychologist, speech therapist, and another specialist) is greater for the computer-assisted group by $5.89, due to the additional time used during the assessment process to discuss and prepare the proposed IEP.

Table 2

Estimates of Staff Time and Cost in IEP Development
for an Annual Review by Non-Computer Users

Position	Average Minutes of Time Spent		Total Minutes	Dollars Per Min.[a]	Dollar Minimum	Dollar Maximum
	Assessment	IEP Meeting				
Teacher	151	57	208	0.2600	54.08	54.08
Principal or Designee	---	57	57	0.3851	21.95	21.95
(Psychologist)[b]	30	57	87	0.3034	---	26.40
(Speech Therapist)	45	57	102	0.2600	---	26.52
(Other DIS Specialist)	45	57	102	0.2600	---	26.52
Parent	---	57	57	---	---	---
				Total Cost	$76.03	$155.47

Total Staff Time = 4.4 to 9.3 hours

Table 3

Estimates of Staff Time and Cost in IEP Development
for an Annual Review by Non-Computer Users

Position	Average Minutes Spent		Total Minutes	Dollars Per Min.[a]	Dollar Minimum	Dollar Maximum
	Assessment	IEP Meeting				
Teacher	139	41	180	0.2600	46.80	46.80
Principal	---	41	41	0.3851	15.80	15.80
(Psychologist)[b]	60	41	101	0.3034	---	30.64
(Speech Therapist)	90	41	131	0.2600	---	34.06
(Other DIS Specialist)	90	41	131	0.2600	---	34.06
Parent	---	41	41	---	---	---
				Total Cost	$62.60	$161.36

Total Staff Time = 3.7 to 9.7 hours

[a] 1981-82 mean salaries reported by Educational Commission of the States.
[b] Staff listed in ( ) sometimes attend.

These time and cost estimates for the total IEP process--including the assessment as well as the IEP team meeting--are summarized in Table 4 for various types of IEP meetings. The most notable finding favoring the use of computers was for the annual review meeting using a minimal team.

Table 4

Summary of Time and Costs of IEP Development
by Meeting Type and Placement for Manual- and Computer-Constructed IEPs

	Manually-Constructed IEPs		Computer-Constructed IEPs	
	Time (Hrs)	Cost ($)	Time (Hrs)	Cost ($)
Initial Placement: DIS Service	2.3 - 4.2	$36.40 - $92.15	2.0 - 4.2	$31.20- $68.75
Initial Placement: Resource Specialist	5.5 - 9.0	$96.41 -$150.75	4.8 - 8.7	$80.23-$115.85
Initial Placement: Special Day Class in District	14.2- 29.7	$252.76-$493.10	16.6- 30.9	295.63-$518.36
Initial Placement: Special Day Class in Another Agency	24.0- 37.0	$431.20-$646.80	25.6- 38.5	446.68-$663.15
Annual Review: All placements	4.4 - 9.3	$76.03 -$155.47	3.7 - 9.7	$62.60-$161.36

The major source of difference for the computer-assisted and the non-user groups was in the teacher time used in preparing for and conducting the IEP meeting. When the time of the major special education teacher/specialist was used as the basis for comparison, the number of minutes was either the same for both groups (for an initial Resource Program placement), or favored those using computers. The savings for the teacher with computer assistance ranged from 7 to 28 minutes. The greatest savings were made for the annual review meeting. This meeting has special importance in terms of measuring IEP time savings, as it makes the greatest use of the computer. The initial placement meetings frequently have a number of time-consuming activities which do not relate to whether or not a computer is used; they also require a complete entry of student information and a first pass at identifying student instructional objectives. The teacher time with and without computer-assisted IEPs is shown in Table 5.

In addition to the study within California, a search was conducted to find IEP systems outside of California and an analysis of available computer programs was made. This analysis included information on the IEP sections produced by each system, the reports available and the type of equipment used. Some of the cost information in the next section came from this national search.

Table 5

Comparison of Special Education Teacher/Specialist Time
Used in Assessment, IEP Meetings and Total,
With and Without Computer-Assisted IEPs

Meeting Type	Assessment			IEP Meeting			Total Minutes		
	Without Computer	With Computer	Difference	Without Computer	With Computer	Computer IEP Dif.	Without Computer	With Computer	Difference
Initial Placement									
DIS	120	90	-30	20	30	+10	140	120	-20
RSP	150	192	+42	89	47	-42	239	239	0
SDC	180	183	+ 3	70	60	-10	250	243	- 7
Annual Review									
All Teachers	151	139	-12	57	41	-16	208	180	-28

Additional Computerized IEP Costs

Paper Cost--The computer-developed IEPs varied in the number of IEP pages. The shortest IEP was three pages; the longest ranged from eight to fifteen pages. The difference in length depended upon how the objectives were selected and listed in the IEP. If the teacher coded specific objectives to be printed, the IEP had fewer pages. If, however, the computer produced a range of objectives based upon the assessment test scores, the IEP could be lengthy. Computer-produced IEPs required the same number of copies for each page as manually-produced IEPs. The computer-produced IEP did not necessarily lead to savings in paper cost--the cost would be dependent upon the type of IEP produced.

Equipment Cost--The computer equipment used to produced IEPs varied for the different agencies. Those using mainframe computers which were avilable through a school district or county office just had to add a terminal for access. Those using microcomputers usually used available equipment and added the printers and disk drives. Users did not report the use of dedicated equipment for producing IEPs alone. Because equipment was shared and was not purchased solely to produce IEPs, the costs related to equipment cost varied from agency to agency.

Program Cost--All agencies had either purchased ready-made IEP computer programs or had contracted with programmers to produce their IEPs. The ready-made programs for main frame equipment ranged from $2,000 to $5,000 and higher. Ready-made programs for microcomputers usually ranged from $250 to $600, although some were priced up to $5,000. Programmers spent between four months and a year to develop custom IEP programs; the costs for such programmer time were estimated at between $8,300 and $25,000.

Data Entry Cost--Data entry was usually handled by re-trained clerks. Such staff worked on a part-time basis to enter the IEP data. They also performed other tasks in data entry or of a clerical nature. In some cases they substituted the computer data entry task for a manual entry of similar data. Information included in the computer IEP data bank was also used for a number of related management information tasks, so the costs for data entry were not considered solely due to producing IEPs. It was not possible to get cost estimates for data entry that were over and above previous clerical costs.

Analysis

The costs for IEP development and writing are difficult to separate from the process of assessing students and holding team meetings. The costs reported in this study, however, can be compared with those of other studies. The Price and Goddman study (1980) of IEPs prepared by hand reported that the average time spent on each IEP was 386 minutes. The teacher cost for writing an IEP in 1977-78 was $66.81. Using the salary figures for 1981-82 which were applied in this study, the Price and Goodman estimate for writing an IEP would be $100.12, or 50 percent higher than the cost ($65) for the greatest amount of time (250 minutes) used by any single teacher in this study.

Comparisons reporting time savings for IEP development using a specific computer program also seem to be over-estimates. Brown (1982), reporting on the CAMEO IEP program found a 50 percent decrease in teacher time. Lillie and . ards (1982) claimed that the Unistar IEP program saved 60 percent of the time used to develop an IEP. This study showed a time savings for teachers of only 15 percent for one type of IEP preparation--the annual review IEP.

A study of the costs for computer-produced IEPs must also recognize the additional costs for paper, equipment, programs and data entry. These costs, however, were not perceived as problems, nor necessarily as additional costs by the program administrators. In most cases, the computers were already available, programs were being used for other management information purposes, and existing clerical staff were re-trained for data entry. Because most managers did not purchase computer equipment and programs solely for IEP purposes, these computer-related costs, while recognized, were not included in the IEP costs reported by this study.

Results

Based upon comparisons with agencies not using computers, considerable time savings were reported in those agencies using computers to assist in IEP preparation. Specific cost findings were:

> The cost of writing an IEP depends largely on the number of professionals involved. An IEP can cost from $35 to $720.
>
> Teachers with computer-assisted IEPs save an average of 28 minutes at each annual review meeting, with varying time savings for initial placement meetings.
>
> Up to 25 percent of the personnel costs for initial placements of students were saved in agencies using computer-assisted IEPs.

Dollar savings for personnel used in annual review meetings with computer-assisted IEPs amount to up to 18 percent of the total personnel cost.

Computer programs for IEPs are available at costs of $99 to $9,995.

Other findings from this study related to reactions of those using IEPs were:

The IEP paperwork itself is considered useful by parents, teachers and administrators.

Parents use the IEP document as a reference immediately following the meeting, during the year, and to review prior to the the next meeting.

Teachers find the IEP objectives useful for planning daily instruction, and may use other IEP information for reference.

Teachers and administrators find that the IEP documentation helps to structure the IEP meeting process and to focus attention on program planning.

Parents, teachers and administrators or managers are quite open to the use of the computer to assist in the completion of the IEP. These groups see many advantages to computer-assisted construction of the IEP.

Educational Importance of Study

Some of the common concerns of those administrators not using computers were cost, freedom to change and individualize the IEP, and teacher attitudes toward computers. This study found that those using computers did not have these concerns. Specifically, the study found:

Although the installation costs for computer systems to prepare IEPs vary, the reported payoff to teachers and administrators in terms of time-savings is sufficient to offset the operational costs.

Those using computer-assisted IEPs found them to be individualized, due to the many choices that teachers had in selecting objectives, and in changing or adding to any proposed IEP.

Finally, teachers using computer-assisted IEPs had much more positive attitudes toward special education paperwork and all teachers expressed positive attitudes toward using computers.

The findings from this study are of importance to special education administrators who wish to reduce special education paperwork, and who are considering the feasibility of using computers to assist in IEP preparation. Frequently program administrators attempt to install some new innovation without having sufficient data about the benefits and drawbacks. This research study provides information which can be used by those considering change.

BIBLIOGRAPHY

Brown, N. P. "Cameo: Computer-Assisted Management of Educational Objectives. Exceptional Children. 1982, 49 (2), 151-153.

Educational Commission of the States. National Survey of Salaries and Wages: Salaries Paid Professional Personnel in Public Schools, 1981-82. Washington, D.C.: 1982.

Lillie, David and Edwards, Danny. Unistar I. Southern Microsystems. Burlington, N.C.: 1982.

Price, Marianne and Goodman, Libby. Individual Educational Programs: A Cost Study. Exceptional Children, March, 1980, 46, 446-453.

For Further Information

Contact the author:

Nancy C. Enell, Ph.D.
Research and Evaluation Office
San Juan Unified School District
P. O. Box 477
Carmichael, CA 95608

(916) 484-2626